CLAIMS

What is claimed is:

1.   A compatible type optical pickup comprising:

a first light source that generates and emits a first light beam of a predetermined wavelength;

a second light source that generates and emits a second light beam having a different wavelength from that of the first light beam;

a wedge type beam splitter disposed in a first optical path between the first and second light sources, which changes traveling paths of the first and second light beams to allow the first and second light beams to travel along a same optical path and minimizes aberrations;

a main beam splitter disposed in a second optical path of the first and second light sources, between the wedge type beam splitter and an optical recording medium, which changes traveling paths of incident light beams;

an objective lens that focuses the first and second light beams entered via the main beam splitter onto the optical recording medium; and

a main photodetector that receives the first and second light beams reflected from the optical recording medium and detects an information signal and an error signal.

2.   The optical pickup of claim 1, wherein the wedge type beam splitter comprises:

an entrance plane inclined at an angle of θ_1 with respect to an optical axis of the first light beam transmitting the first light beam; and

an exit/reflection plane inclined at an angle of θ_2 with respect to the entrance plane transmitting the first light beam and reflecting the second light beam.

3.   The optical pickup of claim 2, wherein the inclination angle θ_1 of the entrance plane is about 40 degrees.

4.   The optical pickup of claim 3, wherein the inclination angle θ_2 of the exit/reflection plane satisfies the following relationship:

$$0.42° \leq \theta_2 \leq 0.6°.$$

5.   The optical pickup of claim 2, wherein the inclination angle θ_2 of the exit/reflection plane satisfies the following relationship:

$$0.42° \leq \theta_2 \leq 0.6°.$$

6.   The optical pickup of claim 1 further comprising:

a first grating disposed in an optical path between the first light source and the wedge type beam splitter, diffracting the incident light beam; and

a second grating disposed in an optical path between the second light source and the wedge type beam splitter, diffracting an incident light beam.

7.   The optical pickup of claim 1, further comprising an astigmatic lens disposed in an optical path between the main beam splitter and the main photodetector, introducing astigmatism in a light beam entering via the main beam splitter.

8.   The optical pickup of claim 1, further comprising a collimating lens disposed in an optical path between the main beam splitter and the objective lens, which collimates an incident divergent light beam into a parallel beam.

9.   The optical pickup of claim 1, further comprising a monitoring photodetector that receives the light beams split by the main beam splitter and monitors optical power output from the first and second light sources.

10.   The optical pickup of claim 1, further comprising a coupling lens disposed in an optical path between the first light source and the wedge type beam splitter converging the light beam emitted by the first light source.

11.   The optical pickup of claim 10, wherein the coupling lens is implemented with one of a spherical lens, an aspheric lens, and a holographic optical element.

12.   The optical pickup of claim 1, further comprising:

a first grating disposed in an optical path between the first light source and the wedge type beam splitter to diffract the incident light beam;

a second grating disposed in an optical path between the second light source and the wedge type beam splitter to diffract the incident light beam;

an astigmatic lens disposed in an optical path between the main beam splitter and the main photodetector to cause astigmatism in a light beam entering via the main beam splitter;

a collimating lens disposed in an optical path between the main beam splitter and the objective lens, collecting and transforming an incident divergent light beam into a parallel beam;

a monitoring photodetector that receives the light beams split by the main beam splitter and monitors optical power output from the first and second light sources; and

a coupling lens disposed in an optical path between the first light source and the wedge type beam splitter, to converge the first light beam emitted from the first light source.

13.   The optical pickup of claim 10, wherein the coupling lens is an optical element designed to control the occurrence of offset of the first light beam and optical efficiency.

14.   The optical pickup of claim 10, wherein the first light beam transmitted through the coupling lens and the wedge type beam splitter becomes nearly parallel minimizing optical aberration.

15.   The optical pickup of claim 1, wherein the wedge type beam splitter has a flat plate structure.

16.   The optical pickup of claim 1, wherein the wedge type beam splitter disposed between the first and second light sources, changes traveling paths of first and second incident light beams so that the first and second incident light beams travel along a same optical path.

17.   The optical pickup of claim 1, wherein the wedge type beam splitter minimizes optical aberrations including astigmatism and coma aberration.

18.   The optical pickup of claim 1, wherein the wedge type beam splitter has a flat plate structure, simplifying a coating that determines transmissivities and reflectivities of an entrance plane and exit/reflection plane when compared to those employing a cubic type beam splitter.

19.   The optical pickup of claim 1, wherein the first and second light sources are disposed in close proximity to the wedge type beam splitter.

20.   The optical pickup of claim 1, wherein a driving IC, driving the first and second light sources is placed near both first and second light sources, reducing noise generated between either the first or second light sources and the driving IC.